

REMARKS

Claims 86-99, 104-107, 109-123, 125-130 are pending in this application.

Claims 89-92, 112-123, 125 and 127 are allowed.

Claims 86-88, 93-96, 104-107, 109-111, 125, 128 and 130 are rejected.

Claims 97-99 and 129 are objected to.

The drawings are objected to under 37 CFR 1.83(a). Claim language for claim 93 where the offending phrase occurs has been amended.

Claims 86-88, 94-96, 110 and 111 are rejected under 35 USC §103 (a) as being unpatentable over Desmond and Storey.

Claims 86-88 pertain to an "alternate string anchoring point".

My prior Amendment addressed the objections to "string anchoring point" following a telephonic interview with Examiner Lockett. In a more recent telephonic interview with Supervisor Lincoln Donovan, Mr. Donovan indicated that in view of the Specification the term "string anchor" is sufficiently limited in interpretation that such that claim language need not be amended with the phrase "a recess in order to receive the string anchor". Accordingly, claim language has been re-amended.

Claim 93 has been amended to not include the reference to the surface of body of the instrument since the drawings do not include the reference.

Claims 94-96 are directed to a global tuner mechanism with a thumbwheel. Independent claim 94 and 96 have been amended in view of the language of the specification found in the Detailed

Description of the Invention (paragraph 26): “to alter the bias that the spring applies...”; and additional claim language is added to limit the apparatus in that it must make **direct** (emphasis added) contact with or be connected to the biasing element, in order to distinguish over the cited prior art.

Claim 95 depends from 94 and requires no amendments in view of the language change in claim 94.

Claims 97-99 depend from 96 and require no amendments in view of the language change in claim 96.

Claims 104 – 107 and claim 109 are withdrawn without prejudice.

Claim 125 is rejected under 35 USC §103 (a) as being unpatentable over Minakuchi and Storey. The Examiner contends that Minakuchi discloses an unitary component (6) that is a single piece of bent material (column 3, lines 15-20). Bridge base 4 is a single cast component not a single bent material; it remains impossible by current technology to “bend” from a single piece of plate material the complex structures shown in Minakuchi. The term, “bend”, disclosed in Minakuchi is a description for the transition of 6A to 6B of bridge base 4 and which is not literally bent as is disclosed in the applicant’s specification.

The specification provides for a bearing assembly in the Detailed Description of the Invention (paragraph 4):

“In housing 30 rearward post 31, there is opening 76 extending transversely of the string direction of guitar 1 containing bearing assembly 35, formed by four side-by-side roller bearings 36.”

And in the Detailed Description of the Invention (paragraph 27):

“The base plate 220 and spring blade 220 are integrally formed from a single piece of material as follows. A single piece of **plate** (emphasis added) material, such as 7/64” is provided”.

Further, neither Storey nor Minakuchi disclose a fulcrum tremolo with a bearing assembly and a unitary component that is a single piece of bent plate material.

Accordingly, claim 125 is amended to include "plate" to limit the material in order to distinguish over the cited art.

Further, after discussion with Mr. Donovan, a further limitation is added to the claims: "having a substantial uniform thickness" to ensure clarity.

There is no limitation in claim 125 "in order to lock a base at a specific position" as cited by the Examiner in the Office Action.

Claims 128 and 130 are rejected under 35 USC §103 (a) as being unpatentable over Matsui et al in view of Storey. The Examiner states Matsui discloses macro-tuners.

Further still, after discussion with Mr. Donovan, it became apparent that terms "fulcrum tremolo" and "macro tuners" have inherent specific limitation ascribed to them – Mr. Donovan requested that the following be drawn accordingly in support of existing claim language.

In the Specification, page 6, lines 12-16 as well as McCabe US Patents '831, '094 and '191:

"Macro-tuners refer to tuners with the capacity to raise and adjust from an untensioned condition strings to proper playing pitch, providing for alternate tunings, and compensation for substantial string stretch during the life of the string essentially without additional means." Page 6, lines 12-16. McCabe US Patents '831, '094 and '191.

Further, in the Specification, Background of the Invention, page 4 there are specific limitations that define fulcrum tremolos:

Therefore, for stringed musical instruments, as is known to those skilled in the art:

- the second critical point is a clearly defined point on the bridge or individual bridge elements, the adjustment of which relative to the first critical point on the nut defines

the length of the string or scale length and is called harmonic tuning;

- for fulcrum tremolos as originated by Fender U.S. Pat. No. 2,741,146, when pivoted:
- both the bridge portions and the string anchoring means, the tailpiece, simultaneously move about a fulcrum axis;
- there is a tendency for the harmonic tuning to be upset; and
- various factors can disturb the equilibrium point between the tension of the strings and the tension of the counter springs and as a consequence disturb the initial position; and for those fulcrum tremolos equipped with fine tuners as with Rose U.S. Pat. No. 4,497,236, Storey U.S. Pat. No. 4,472,750 and Fender U.S. Pat. No. 4,724,737:
- the fine tuners simultaneously move with the bridge and tailpiece portions about the fulcrum axis when the device is pivoted; and
- fine tuners are designed to offer the tuning of the strings a minor adjustment of pitch after the general tuning is first achieved by the tuning pegs on the head of the instrument; and for those fulcrum tremolos fitted with string locks at the first and second critical points as in Rose U.S. Pat. No. 4,171,661 ...

Further, in the Specification, Background of the Invention, page 5-6 there are specific limitations that define macro tuners that contrast "fine tuners":

Additionally, the replacement of fine tuners with macro-tuners on a fulcrum tremolo (McCabe U.S. patent application Ser. No. 07/607,458, Continuation Ser. No. 08/027,729, filed Jan. 14, 1993) provided an intonation module that included a novel integrated one piece bridge-tailpiece structure secured to the base plate where each string anchored within its respective structure passes through a separate lever member and over the bridge element wherein the lever member could be displaced by an adjustment bolt to provide the means to bring and adjust the strings to playing pitch from an untensioned condition **circumventing the retuning limits imposed by the fine tuner arrangements.** (emphasis added)

Matsui, Col.1 lines 14 -

"It is convenient to describe the present invention in relation to a guitar, although the invention is applicable to other stringed instruments. The main components of a guitar are the body, the peg head, and the elongated neck which extends between the body and the head. The strings extend, essentially in parallel spaced relation to one another, between a bridge located on the body and the head of the guitar. It is also common to anchor or clamp one end of a string on the body, usually at the bridge. The other end of the string is received on a respective tuning peg, located on the head, which pulls the string to adjust its tension. The tuning pegs are the primary means for pitch tuning.

The present invention provides a tuning mechanism for fine tuning a string by changing string length and/or string tension. The mechanism is located at the bridge of the guitar. Furthermore, it is very accessible, easy to use and can be implemented economically.

A fine tuning mechanism is described in U.S. Pat. No. 4,497,236 to Rose. Rose discloses a series of fine tuning elements arranged on a base."

Matsui does not disclose the four inherent limitations of macro-tuners only the "pitch tuning members" used with a thumbscrew (41) that pivots (31) that "adjusts string tension" that are a variant of Rose 4,497,236 "fine tuning mechanism" (Matsui Col 1, lines 41-42) - the "pitch tuning members" simply modify or adjust within a few musical pitches, say from E to F sharp, a string that is tensioned by other means such as the tuning pegs at the head of the instrument; further, like fine tuners of Rose, fine tuners do not have the capacity to tension a string from an untensioned condition to proper playing pitch since the range of adjustment is inadequate to compensate for substantial string stretch. Accordingly, the macro-tuners are not recited.

The applicant would like to respectfully submit, there are many variations on fine tuning mechanisms such as Matsui and Rose, for example, those by Fender and Storey that have been patented for use on the fulcrum tremolo and would like to point out there has been a continuum

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of confusion about the specific requirements of macro-tuners on fulcrum tremolos in particular. Further, the definition for fulcrum tremolo in the specification (page 2, lines 11 – 26):

“... the fulcrum tremolo, Fender U.S. Pat. No. 2,741,146, shows and provides a tremolo device which incorporates a novel bridge structure which incorporates the tailpiece which is commonly known to provide the anchoring means for the strings. The bridge plate is also known as the base plate. The base plate upon which the individual bridge elements are adjustably secured has a beveled ridge portion mounted to the instrument body by six screws permitting pivotal movement about a fulcrum axis for varying the tension on the strings and producing the desired tremolo effect. Further, the bridge and the tailpiece both move together as the tremolo device is pivoted. A singular aspect of the fulcrum tremolo is that the harmonic tuning is upset as the device is pivoted.’

Accordingly, Storey US Patent No.: 4,472,750 would be a fulcrum tremolo but the tremolo of Storey US Patent No.: 4,487,100 would not be a fulcrum tremolo since both the bridge element and tailpiece of ‘100 do not move together and the harmonic tuning is not upset when the device is pivoted. Neither devices comprise macro-tuners, only fine tuners.

Claim construction for 128 - 130 has been amended for clarity.

Marked Up Version Of The Pending Claims under 37 C.F.R. 1.121(c)(1)(ii):

86-99, 104-107, 109-123, 125-130 are as follows and in accordance with 37 C.E.R. 1.121(c), by which the Applicant submits the following marked up version, wherein the markings are shown by brackets (for deleted matter) and/or underlining (for added matter):

I claim:

Claims 1 – 85 (Cancelled)

86. (Currently Amended) A tuning apparatus for a stringed musical instrument comprising:

- [a body and
- a neck extending outwardly from said body,
- a plurality of strings extending from the body to the neck,
- a first critical point for each of said strings on the neck,
- a second critical point for each of the strings on the body

comprising]

- a bridge element[,] and
- [an anchoring point for one end of the strings on the neck,
- the bridge element further comprising:]
- a tailpiece, the tailpiece comprising:
- an anchoring point [for another end of the strings,] and
- an alternate string anchoring point. [for each string].

87. (Previously Amended) The apparatus of claim 86, wherein the apparatus further comprises:

- a tremolo.

88. (Previously Amended) The apparatus of claim 86, wherein the apparatus further comprises:

a fulcrum tremolo.

89. (Previously Amended) A tuning apparatus for a stringed musical instrument comprising:

a body and

a neck extending outwardly from said body,

a plurality of strings extending from the body to the neck,

a first critical point for each of said strings on the neck,

a second critical point for each of the strings on the body,

the apparatus further comprising:

a base comprising a forward end and a rearward end and upper portion and a lower portion, comprising:

a bridge element connected to the base, the bridge element located closer to the forward end forming a second critical point;
and

a first portion connected to the base and located in the rearward end forming an alternate string anchoring point closer to the lower portion than the second critical point, and

wherein the lower portion being attached to the upper portion and the lower portion comprises:

a second portion that is transverse to the alternate string anchoring point;

and a first string anchoring point.

90. (Previously Amended) The apparatus of claim 89, wherein the apparatus further comprises:

a fulcrum tremolo.

91. (Previously Amended) The apparatus of claim 89, wherein the upper portion further comprises:

a string opening located between the first anchoring point and the second critical point, and

wherein the second portion further comprises:

a member with a string passageway connected to the second anchoring point having an axis, the axis being aligned to the string opening in the upper portion.

92. (Previously Amended) The apparatus of claim 91, wherein the apparatus further comprises:

a fulcrum tremolo.

93. (Currently Amended) An apparatus [stringed musical instrument] comprising:

[a body having a surface;]

a bridge element [attached to the body; comprising] and

a tailpiece element connected to the bridge element [attached to the surface of the body], the tailpiece comprising:

a first portion having a rearward surface having a string anchoring point comprising a recess formed to receive a string anchor [formed] therein[, and located above the surface of the body;] and

a second portion that is transverse to the first portion [, and extends through at least a portion of the body, the second portion] comprising:

a first end that connects the second portion to the first portion;

a second end, the second end having an alternate string anchoring point comprising a recess formed to receive a string anchor [and formed therein below the surface of the body;] and an elongated passageway that extends through the second portion from the first end to the second end, along a longitudinal axis of the second portion, forming at least one opening on each end.

94. (Currently Amended) An apparatus comprising:
- a body;
 - a fulcrum tremolo;
 - a biasing element comprising a first end connected to the fulcrum tremolo and a second end connected to the body; and
 - at least one biasing element holder; and
 - a singular apparatus directly connected to the biasing element [fulcrum tremolo], the singular apparatus comprising:
 - a thumbwheel portion operable to position the at least one biasing element holder,
- wherein rotation of the thumbwheel portion alters the bias applied by the biasing element [adjusts the equilibrium point between the tension of the strings and the tension of the biasing element to adjust initial position].
95. (Previously Presented) The apparatus of claim 94, wherein the singular apparatus further comprises:
- a U-shaped spring.

96. (Currently Amended) An apparatus for a stringed musical instrument comprising:
a body; and
a fulcrum tremolo,
the apparatus comprising:
a biasing element, the biasing element comprising at least one spring comprising a first end and a second end, the first end and the second end positioned opposite from each other on the at least one spring, the at least one spring positioned between the fulcrum tremolo and the body;
a spring holder connected to the biasing element;
a singular apparatus in direct contact with [connected to] the at least one spring, the singular apparatus comprising a thumbwheel and
a threaded elongated portion, the threaded elongated portion threadedly connected to the singular apparatus and the threaded elongated portion threadedly connected to the singular apparatus,
wherein rotation of the thumbwheel alters the bias applied by [adjusts the equilibrium point between the tension of the strings and the tension of] the at least one spring [and thereby adjusting the initial position of a fulcrum tremolo.]
97. (Previously Presented) The apparatus of claim 96, wherein the singular apparatus further comprises:
a secondary spring holder being threadedly engaged with the threaded elongated portion, and
wherein the fulcrum tremolo being positioned between the thumbwheel and the secondary spring holder.
98. (Original) The apparatus of claim 96, wherein the spring holder being positioned between the thumbwheel and the biasing element.

99. (Original) The apparatus of claim 98, further comprising a secondary spring holder connected to the biasing element,

wherein the thumbwheel further comprises a second elongated threaded portion, wherein the fulcrum tremolo further comprises a threaded opening, and wherein the thumbwheel is positioned between the secondary spring holder and the threaded opening.

100. Cancelled

101. Cancelled

102. Cancelled

103. Cancelled

104. Cancelled

105. Cancelled

106. Cancelled

107. Cancelled

108. Cancelled

109. Cancelled

110. (Currently Amended) A fulcrum tremolo with a forward end and a rearward end, the fulcrum tremolo comprising:
a base plate comprising a string hole,

a spring holder that is transverse to the base plate comprising:

a [first] tailpiece,

the tailpiece comprising a string anchoring point; and

a string passageway having an axis wherein a longitudinal axis of the string passageway aligns with the string hole;

an intonation module attached to the spring holder comprising:

[a base;]

a bridge element connected to the base, the bridge element located closer to the forward end than the rearward end [and forming a second critical point]; and

wherein the rearward portion forms an alternate tailpiece, the alternate tailpiece comprising an alternate string anchoring point [closer to the base than the second critical point; and

wherein the alternate string anchoring point is located a [critical] distance from the second critical point so that a string is rendered essentially inextensible between the alternate string anchoring point and the second critical point.

111. (Original) The fulcrum tremolo of claim 110, wherein the intonation module further comprises:

a macro tuner.

112. (Previously Amended) A tremolo for a stringed musical instrument comprising: at least one bridge element; and
- a unitary component that is a single piece of bent material comprising:
 - a base plate being approximately planar, comprising:
 - a forward edge, a portion of the forward edge being a pivot and forming a pivot axis, and
 - an end opposite of the forward edge;
 - the opposite end of the forward edge of the base plate comprising:
 - a bend in the unitary component;
 - a transverse portion comprising:
 - at least one spring socket to receive an end of at least one biasing element; and
 - wherein the bend transitions the base plate to the transverse portion, and
 - wherein the bend and the transverse portion are approximately parallel to the pivot axis, and
 - wherein the unitary component is connected to the at least one bridge element.
113. (Previously Presented) The tremolo of claim 112, wherein the transverse portion further comprises:
- at least one string socket.

114. (Previously Presented) A fulcrum tremolo for a stringed musical instrument comprising:

- a unitary component that is a single piece of bent material comprising:
 - a base plate being approximately planar, comprising:
 - a forward edge, a portion of the forward edge being a pivot and forming a pivot axis, and
 - an end opposite of the forward edge;
 - a first bend in the unitary component at an opposite end of the forward edge of the base plate;
 - and a transverse portion comprising:
 - at least one spring socket to receive an end of at least one biasing element,
 - wherein the first bend transitions the base plate to the transverse portion,
 - and
 - wherein the first bend and the transverse portion are approximately parallel to the pivot axis,
- at least one bridge element connected to the unitary component.

115. (Original) The fulcrum tremolo of claim 114, wherein the first bend further comprises:

- a reinforcement.

116. (Previously Presented) The fulcrum tremolo of claim 114, wherein the transverse portion further comprises:
at least one string socket to receive an end of a string.
117. (Previously Presented) The fulcrum tremolo of claim 116, wherein the base plate further comprises at least one string hole, and wherein the transverse portion further comprises:
an upper portion;
a lower portion comprising at least one string passageway, each of the at least one string passageway is aligned with at least one of the least one string hole in the base plate; and
at least one second bend that transitions from the upper portion to the lower portion,
wherein the lower portion is approximately parallel to the pivot axis.
118. (Previously Presented) The fulcrum tremolo of claim 116, wherein the base plate further comprises:
at least one tier for displacing the at least one bridge element from the base plate.
119. (Original) The fulcrum tremolo of claim 114, wherein the transverse portion further comprises:
the at least one string socket
120. (Original) The fulcrum tremolo of claim 114, wherein the pivot further comprises: a pivot having a knife edge.
121. (Original) The fulcrum tremolo of claim 114, wherein the pivot further comprises: a pivot having a beveled edge.

122. (Previously Presented) The fulcrum tremolo of claim 114, wherein the pivot further comprises:
a least a portion of a ball bearing surface.
123. (Original) The fulcrum tremolo of claim 114, wherein the pivot further comprises: at least a portion of a ball bearing surface; and
at least a portion of a shaft.
124. Cancelled
125. (Currently Amended) A fulcrum tremolo for a stringed musical instrument comprising:
at least one bridge element; and
a unitary component that is a single piece of bent plate material
comprising having a substantial uniform thickness:
a base plate being approximately planar, comprising:
a pivot forming a pivot axis;
at least one bend in the base plate;
at least one additional portion formed to receive at least a portion
of at least one bearing assembly,
wherein the at least one bend and the at least one additional portion have
an axis approximately parallel to the pivot axis, and
wherein the unitary component is connected to the at least one bridge
element.

126. (Previously Presented) A fulcrum tremolo for a stringed musical instrument

comprising:

- at least one bridge element; and

- a base plate being approximately planar, comprising:

 - a forward edge; and;

 - at least one additional portion formed to receive at least a portion of at least one bearing assembly;

- the at least one bearing assembly, comprising:

 - at least a portion of a shaft, at least one housing,

 - at least a portion of a ball bearing surface, and at least one annular flange

wherein the at least one annular flange spaces the at least a portion of at least one bearing assembly away from the base plate.

127. (Previously Presented) A bridge-tailpiece for a stringed musical instrument comprising:

- a fulcrum tremolo, the fulcrum tremolo further comprising:

- an element to receive at least one musical instrument string, the element comprising:

 - a first string anchoring point for each string; and

 - an alternate string anchoring point for each string;

and

- an intonation module with a forward portion and a rearward portion:

 - the intonation module comprising:

 - a base;

- a bridge element connected to the base, the bridge element located closer to the forward end forming a second critical point; and

- wherein the rearward portion forms a string anchoring point closer to the

base than the second critical point; and
wherein the string anchoring point is located a critical distance from the second critical point operable to render a string as approximately inextensible between the anchoring point and the second critical point;

and

a biasing element comprising a first end connected to the fulcrum tremolo and a second end connected to the body; and
at least one biasing element holder; and
a singular apparatus connected to the fulcrum tremolo, the singular apparatus comprising:

a thumbwheel portion operable to position the at least one biasing element holder,
wherein rotation of the thumbwheel portion adjusts the equilibrium point between the tension of the strings and the tension of the biasing element to adjust initial position;

and

an unitary component that is a single piece of bent material comprising:

a base plate being approximately planar, comprising:

a forward edge, a portion of the forward edge being a pivot and forming a pivot axis, and

an end opposite of the forward edge;

the opposite end of the forward edge of the base plate comprising:

a first bend in the unitary component;

and a transverse portion comprising:

at least one spring socket to receive an end of at least one biasing element,

wherein the first bend transitions the base plate to the transverse portion,

and

wherein the first bend and the transverse portion are approximately parallel to the pivot axis:

the unitary component further comprising:

at least one additional portion formed to receive at least a portion of at least one bearing assembly,

wherein the at least one bend and the at least one additional portion have an axis approximately parallel to the pivot axis, and

wherein the unitary component is connected to the at least one bridge element.

128. (Currently Amended) A fulcrum tremolo for a stringed musical instrument comprising a body and a neck, a plurality of strings extending from the body to the neck, a nut for supporting the strings on the neck forming a first critical point for each string wherein the fulcrum tremolo comprises a macro tuner:

the macro tuner having a forward end closer the nut and a rearward end further the nut, the macro tuner comprising:

a base;

a bridge element connected to the base located closer the forward end forming a second critical point;

an elongated portion slideably connected to the base;

[the elongated portion further comprising] a string holder element, the string holder further comprises a tailpiece, and

an adjustment screw connected to the base operable to position the elongated portion;

the elongated member, the adjustment screw and the string holder located on the opposite side of the second critical point from the first critical point,

wherein threading the adjustment screw is operable to position the string holder element to change tension of strings.

129. (Currently Amended) The macro tuner [fulcrum tremolo] of claim 128, wherein the base further comprises a restricted portion,

[the string holder further comprises a string anchor, and]
the elongated member further comprises:

a clamping portion closer to the second critical point; [and]
a string passageway [connecting the string anchor to the clamping portion]; and

an annular flange [positioned between the clamping portion and the string anchor], and

wherein the annular flange is in varying contact with the restricted portion;
wherein threading the adjustment screw to tension a string is operable to clamp the string between the second critical point and the tailpiece [string anchor].

130 (Currently Amended) A macro tuner having a front [forward] end and a rearward end, the macro tuner comprising:

a bridge element located closer the front [forward] end forming an intonation [second critical] point;

an elongated member slideably connected to the macro tuner, the elongated member located on the opposite side of the bridge element from the front end [between the forward and rearward end],

an adjustment screw connected to the macro tuner operable to position the elongated member; the adjustment screw located on the opposite side of the bridge element from the front [closer the rearward] end, [and]

a string holder element connected to the elongated member [macro tuner] located on the opposite side of the bridge element from the front end [between the bridge element and the rearward end], the string holder element comprising a tailpiece comprising a string anchoring point,

wherein threading the adjustment screw is operable to position the string holder element to [change] tension [of] a string[s], and

wherein the macro tuner is located on an apparatus consisting of a fulcrum tremolo [of an stringed musical instrument].

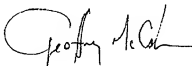
REQUEST FOR NOTICE OF ALLOWANCE

Applicant requests a Notice of Allowance for claims 86-99, 104-107, 109-123, 125-130 which are pending in this application..

CONCLUSION

All pending claims, 86-99, 104-107, 109-123, 125-130, are in condition for allowance. Applicant respectfully requests reconsideration and prompt issuance of the subject application. If any issues remain that prevent issuance of this application, the Examiner is urged to contact the undersigned applicant before issuing a subsequent Office Action.

Respectfully submitted,



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